

Case Study #2: West African Manatees and Dugongs - Ecological Roles of African Sirenians

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Among the megafauna tied to these coastal and riverine systems are the dugongs and manatees, large herbivores dependent on tropical and subtropical shallow-water habitats rich in plant resources. Africa is home to two of these iconic species: the Dugong, found along the eastern African coastline, and the West African manatee.

West African Manatee Ecology

The West African manatee (*Trichechus senegalensis*) is a large aquatic mammal found in coastal and inland wetlands of Western Africa between Mauritania and Angola, and inland as far as Mali, Niger, and Chad (Figure 1 and 2) (ref). It occupies coastal and estuarine habitats, coastal lagoons, and the lower reaches of most river systems from the Senegal River of Mauritania/Senegal to the Longa River in Angola. It has also found its way into the mid and upper reaches of several rivers in this region, notably the Senegal and Niger Rivers. It feeds on a diverse set of aquatic angiosperms in marine, estuarine, and freshwater habitats, and occasionally on fish, clams, crabs, and mussels (ref).

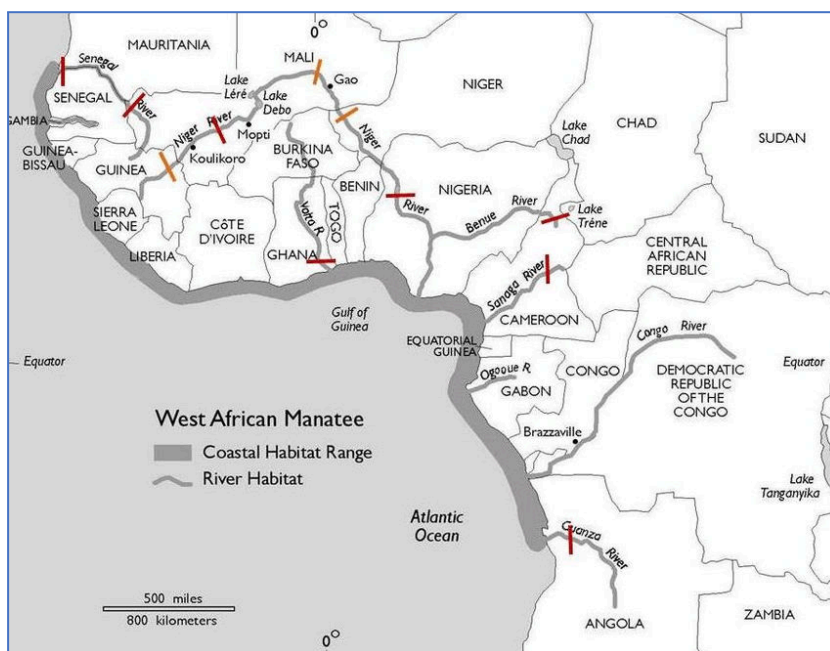


Figure 1: Distribution of the West African manatee, showing how the species reaches far inland exploring freshwater ecosystems. [Image Source](#)

Manatees consume 4 to 13% of their body weight (166-640 kg⁶) daily, hence between 2.4 and 30.4 tons yearly. This substantial intake has ecological implications: through vegetation removal and fertilization, manatees have been found to affect the biomass, structure, community composition, and dynamics of the vegetation, although concrete information on each of the potential impacts is very limited for the West African manatee (ref). The lack of information also applies to two other

⁶ Kingdon, J. 2015: «The Kingdon Field Guide to African Mammals», 2nd edition, Bloomsbury Wildlife, London

potential impacts: seed dispersal and bioturbation ([ref](#)). It has been hypothesised that the West African manatee exert a form of biological control against the proliferation of water hyacinth in rivers and streams, a function of particular interest in Niger ([ref](#)). In some areas, there may be a positive relationship between the presence of manatees and an increase in fisheries productivity, due to the enrichment of water by manatee dung ([ref](#)). To support the long-term survival of the species, a Conservation Strategy for the West African Manatee ([ref](#)) was developed under the Abidjan Convention, followed by an Action Plan for the Conservation of the West African manatee developed under the auspices of the Convention on the Conservation of Migratory Species of Wild Animals, CMS ([ref](#)).



Figure 2: The West African manatee is an animal of both coastal and inland wetlands. [Image Source](#)

Dugong Ecology and Distribution

The Dugong (*Dugong dugon*) is the only herbivorous mammal that is strictly marine ([ref](#)). The three other species in the sea cow group (order *Sirenia*), the manatees, all of which use freshwater habitats to varying degrees. Dugongs are seagrass specialists, feeding on leaves or uprooting whole plants when they are accessible. Their world distribution is determined by specific seagrass species, *Potamogetonaceae* and *Hydrocharitaceae*. The African populations are at the western fringe of the distribution ([Figure 3](#)). Dugongs appear to be rapidly declining in East Africa ([ref](#)). Dugongs were known to occur off Somalia, Kenya, Tanzania, Mozambique, Comoros, Madagascar, and Mauritius. Currently there appear to be very few individuals remaining along the coasts of Somalia, Kenya, Tanzania, Mayotte (in the Comoros Archipelago), Madagascar and the Seychelles, and there have been no reports of dugongs off Mauritius for many years. The population in Mozambique waters has also declined rapidly in recent years, with one small left in Bazaruto Archipelago National Park ([ref](#)). In contrast, the situation seems to be more positive in the Red Sea region where an estimated 4,000 dugongs were recorded in 1986 ([ref](#)).

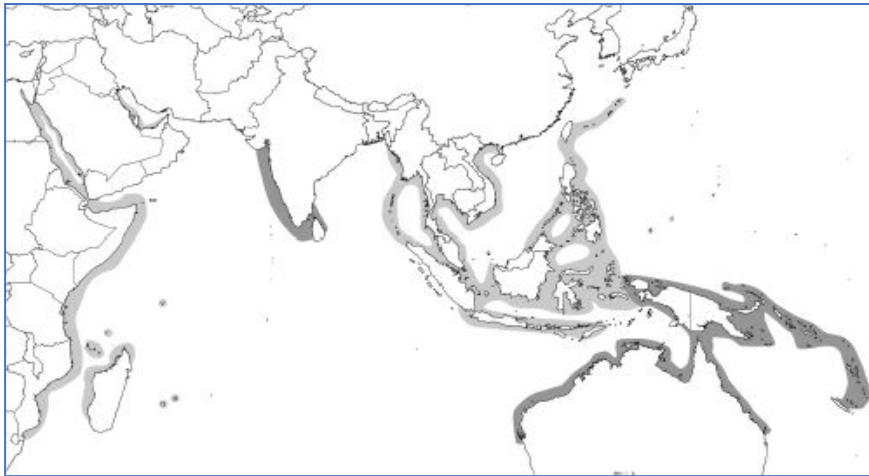


Figure 3: Global distribution of the dugong in the Indo-Pacific region. [Image Source](#)

Dugongs as Seagrass Engineers

Dugongs interact closely with the ecology of seagrass meadows ([ref](#)) (Figure 4). They consume 10-15% of their body weight (250-420 kg⁷) daily ([ref](#)), equivalent to between 9.1 and 23 tons yearly, and they require up to 3.5 hectare of seagrass habitat annually for sustenance ([ref](#)). Dugong grazing can lead to significant reductions in seagrass biomass: up to 96% of aboveground biomass, 73% of belowground biomass, 86% of total biomass, and as much as 94% in aerial coverage ([ref](#)). Though dugongs can rapidly remove seagrass biomass, the latter have been found to be resilient and to recover over relatively short time periods (3-8 months) ([ref](#)). Through bioturbation, dugongs may affect nutrient dynamics and increase microbial activity in the sediment, therefore contributing to increased nitrogen fixation. By visiting coral reefs to reduce the risk of predation by tiger sharks in seagrass areas, dugongs may also facilitate the translocation of nutrients from the productive coastal systems to the nutrient-poor reefs ([ref](#)).

In some regions, tiger sharks rely heavily on young dugongs as a food source, which in turn influences their feeding behaviour ([ref](#)). In subtropical seagrass ecosystems in Western Australia, large tiger sharks influence the foraging behaviour of dominant grazers - including dugong and green turtles - by inducing shifts in their habitat use and foraging tactics ([ref](#)). The non-consumptive effect of the sharks creates a landscape of fear where sea turtles and dugongs preferentially forage in seagrass microhabitats that are low in predation risk. Seagrass habitats associated with high predation risk have higher carbon stocks than those with low predation risk ([ref](#)). In Shark Bay, Western Australia, the impact by tiger sharks on the foraging of dugongs and green sea turtles have been estimated to increase the capture of carbon dioxide by 134% ([ref](#)). It has therefore been suggested that to reduce negative impacts of dugongs on seagrass habitats, it's important to concurrently rebuild both populations of predator species and dugongs ([ref](#)). Since tiger sharks also exist in the East African waters ([ref](#)), this appears to be both feasible and ecologically beneficial.

⁷ Kingdon, J. 2015: «The Kingdon Field Guide to African Mammals», 2nd edition, Bloomsbury Wildlife, London



Figure 4: Dugong feeding on a seagrass bed off the coast of Egypt. [Image Source](#)

Conclusion

West African manatees and dugongs are Africa's only sirenians and play key roles in shaping aquatic ecosystems. Manatees influence freshwater and coastal wetlands through heavy grazing, possible seed dispersal, and nutrient cycling. Dugongs, restricted to marine habitats, reshape seagrass meadows through intense grazing, sediment disturbance, and nutrient redistribution, processes that may enhance productivity and carbon storage, especially when predator-prey dynamics are intact.

Both species face serious threats. Manatees are impacted by poaching, entanglement, and habitat fragmentation from dams. Dugongs have declined sharply across East Africa, with only a small population remaining in Mozambique. Habitat degradation and insufficient protection are driving their decline.

Conservation must focus on habitat protection, predator restoration, and local stewardship. Dugongs require healthy seagrass beds and marine management; manatees need connected freshwater systems and enforcement of anti-poaching laws. Research on their ecological roles and contributions to ecosystem services like carbon capture is also needed.

Protecting these species supports biodiversity, ecosystem resilience, and local communities - their survival is essential for the health of Africa's coastal and freshwater systems.